SEQUENCE LISTING

<110> HABERMANN, PAUL
BENDER, RUDOLF

<120> SIGNAL SEQUENCES FOR PREPARING LEU-HIRUDIN BY SECRETION BY E. COLI INTO THE CULTURE MEDIUM

<130> 02481.1693

<140>
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<160> 33

<170> PatentIn Ver. 2.1

<210> 1
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Oligonucleotide

<400> 1
tttttttaag cttgggctgc aggtc 25

<210> 2
<211> 54
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 2
tggcactggc aggtttcgct accgtagcgc aagcccttac gtatactgac tgca 54

<210> 3
<211> 57
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 3
ttttttgaat tcatgaaaaa gacagctatc gcattagcag tggcactggc aggtttc 57

<210> 4
<211> 58
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 4
ggttctctta ttgccgctac ttctttcggc gttctggcac ttacgtatac tgactgca 58

<210> 5
<211> 56
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 5
ttttttgaat tcatgaaaaa caccttgggc ttggccattg gttctcttat tgccgc 56

<210> 6
<211> 61
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 6
gttgccgtcg cagcgggcgt aatgtctgct caggcaatgg ctcttacgta tactgactgc 60
a 61

<210> 7
<211> 59
<212> DNA
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<220>
<223> Description of Artificial Sequence: Primer

<400> 7
ttttttgaat tcatgatgat tactctgcgc aaacttcctc tggcggttgc cgtcgcagc 59

<210> 8
<211> 63
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 8
ctaccctgat gggtaccgct ggtctgatgg gtaccgctgt tgctcttacg tatactgact 60
gca 63

<210> 9

<211> 60
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 9
tttttttgaat tcatgaaaaa aatgaacctg gctgtttgca tcgctaccct gatgggtacc 60

<210> 10
<211> 61
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 10
ctgatcccgt tctttgcagc gttctgcctg ccggttttcg cgcttacgta tactgactgc 60
a 61

<210> 11
<211> 56
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 11
tttttttgaat tcatgtccat ccagcacttc cgcgtcgccc tgatcccgtt ctttgc 56

<210> 12
<211> 53
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 12
gctgccgctg ctgttcaccc cggttaccaa agcgcttacg tatactgact gca 53

<210> 13
<211> 57
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 13
tttttttgaat tcatgaaaca gtcgaccatc gcgctggcgc tgctgccgct gctgttc 57

<210> 14
<211> 53
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 14
gctgagctgc ctgatcaccc cggtgtccca ggcgcttacg tatactgact gca 53

<210> 15
<211> 57
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 15
ttttttgaat tcatgaaaca gagcgcgatc gcgctggctc tgctgagctg cctgatc 57

<210> 16
<211> 64
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 16
ctttcgctga gtatggcgtt ggggatttca ctgcccgcat gggcacttac gtatactgac 60
tgca 64

<210> 17
<211> 65
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 17
ttttttgaat tcatgaaatc gcggtacaaa cgtttgacct ccctggcgct ttcgctgagt 60
atggc 65

<210> 18
<211> 55
<212> DNA
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Primer

<400> 18
tggtttcagc tttagtaagc ggggttgcat ttgctcttac gtatactgac tgcac 55

<210> 19
<211> 60
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 19
ttttgggaat tcatgaaaaa gacaattatg tctctggctg tggtttcagc tttagtaagc 60

<210> 20
<211> 60
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 20
cggcgctgag tctcgcctta ttttctcacc tatcttttgc ccttacgtat actgactgca 60

<210> 21
<211> 57
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 21
ttttttgaat tcatgtcatt tcatcaccgg gtatttaaac tgtcggcgct gagtctc 57

<210> 22
<211> 227
<212> DNA
<213> Unknown Organism

<220>
<223> Description of Unknown Organism: Hirudin-encoding
DNA sequence

<220>
<221> CDS
<222> (1)..(195)

<400> 22
ctt acg tat act gac tgc act gaa tct ggt cag aac ctg tgc ctg tgc 48
Leu Thr Tyr Thr Asp Cys Thr Glu Ser Gly Gln Asn Leu Cys Leu Cys
1 5 10 15

gaa gga tct aac gtt tgc ggc cag ggt aac aaa tgc atc ctt gga tcc 96
Glu Gly Ser Asn Val Cys Gly Gln Gly Asn Lys Cys Ile Leu Gly Ser
20 25 30

gac ggt gaa aag aac cag tgc gtt act ggc gaa ggt acc ccg aaa ccg 144
Asp Gly Glu Lys Asn Gln Cys Val Thr Gly Glu Gly Thr Pro Lys Pro
35 40 45

cag tct cat aac gac ggc gac ttc gaa gag atc cct gag gaa tac ctt 192
Gln Ser His Asn Asp Gly Asp Phe Glu Glu Ile Pro Glu Glu Tyr Leu
50 55 60

cag taatagagct cgtcgacctg cagcccaagc tt 227
Gln
65

<210> 23
<211> 65
<212> PRT
<213> Unknown Organism

<220>
<223> Description of Unknown Organism: Hirudin-encoded
amino acid sequence

<400> 23
Leu Thr Tyr Thr Asp Cys Thr Glu Ser Gly Gln Asn Leu Cys Leu Cys
1 5 10 15

Glu Gly Ser Asn Val Cys Gly Gln Gly Asn Lys Cys Ile Leu Gly Ser
20 25 30

Asp Gly Glu Lys Asn Gln Cys Val Thr Gly Glu Gly Thr Pro Lys Pro
35 40 45

Gln Ser His Asn Asp Gly Asp Phe Glu Glu Ile Pro Glu Glu Tyr Leu
50 55 60

Gln
65

<210> 24
<211> 30
<212> PRT
<213> Unknown Organism

<220>
<223> Description of Unknown Organism: Control:
cgtase-Ala-hirudin

<400> 24
Met Lys Arg Asn Arg Phe Phe Asn Thr Ser Ala Ala Ile Ala Ile Ser
1 5 10 15

Ile Ala Leu Asn Thr Phe Phe Cys Ser Met Gln Thr Ile Ala
20 25 30

<210> 25
<211> 21
<212> PRT
<213> Serratia marcescens

<220>
<223> Outer membrane protein

<400> 25
Met Lys Lys Thr Ala Ile Ala Leu Ala Val Ala Leu Ala Gly Phe Ala
1 5 10 15

Thr Val Ala Gln Ala
20

<210> 26
<211> 22
<212> PRT
<213> Pseudomonas fluorescens

<220>
<223> oprF protein

<400> 26
Met Lys Asn Thr Leu Gly Leu Ala Ile Gly Ser Leu Ile Ala Ala Thr
1 5 10 15

Ser Phe Gly Val Leu Ala
20

<210> 27
<211> 25
<212> PRT
<213> Escherichia coli

<220>
<223> lamB protein

<400> 27
Met Met Ile Thr Leu Arg Lys Leu Pro Leu Ala Val Ala Val Ala Ala
1 5 10 15

Gly Val Met Ser Ala Gln Ala Met Ala
20 25

<210> 28
<211> 25

<212> PRT
<213> Shewanella putrefaciens

<220>
<223> Fumarate reductase

<400> 28
Met Lys Lys Met Asn Leu Ala Val Cys Ile Ala Thr Leu Met Gly Thr
1 5 10 15

Ala Gly Leu Met Gly Thr Ala Val Ala
20 25

<210> 29
<211> 23
<212> PRT
<213> Unknown Organism

<220>
<223> Description of Unknown Organism: Beta -
Lactamase/pBR322

<400> 29
Met Ser Ile Gln His Phe Arg Val Ala Leu Ile Pro Phe Phe Ala Ala
1 5 10 15

Phe Ser Leu Pro Val Phe Ala
20

<210> 30
<211> 21
<212> PRT
<213> Escherichia coli

<220>
<223> Alk. phosphatase

<400> 30
Met Lys Gln Ser Thr Ile Ala Leu Ala Leu Leu Pro Leu Leu Phe Thr
1 5 10 15

Pro Val Thr Lys Ala
20

<210> 31
<211> 21
<212> PRT
<213> Escherichia fergusonii

<220>
<223> Alk. phosphatase

<400> 31
Met Lys Gln Ser Ala Ile Ala Leu Ala Leu Leu Ser Cys Leu Ile Thr
1 5 10 15

Pro Val Ser Gln Ala
20

<210> 32
<211> 27
<212> PRT
<213> Paenibacillus macerans

<220>
<223> Cyclodextrin glucanotransferase

<400> 32
Met Lys Ser Arg Tyr Lys Arg Leu Thr Ser Leu Ala Leu Ser Leu Ser
1 5 10 15

Met Ala Leu Gly Ile Ser Leu Pro Ala Trp Ala
20 25

<210> 33
<211> 24
<212> PRT
<213> Salmonella typhimurium

<220>
<223> Outer membrane protein

<400> 33
Met Ser Phe His His Arg Val Phe Lys Leu Ser Ala Leu Ser Leu Ala
1 5 10 15

Leu Phe Ser His Leu Ser Phe Ala
20